

## **REMARKS**

In view of the above amendments and the following remarks, reconsideration and further examination are respectfully requested.

The specification and abstract have been reviewed and revised to improve their English grammar. The amendments to the specification and abstract have been incorporated into a substitute specification and abstract. Attached are two versions of the substitute specification and abstract, a marked-up version showing the revisions, as well as a clean version. No new matter has been added.

Claims 2-10 and 14-19 have been cancelled without prejudice or disclaimer of the subject matter contained therein. Claims 20-23 have been newly added.

Further, independent claims 1, 11 and 13 have been amended to clarify features of the invention recited therein and to further distinguish the present invention from the references relied upon in the rejections discussed below.

It is also noted that claims 1 and 11-13 have been amended to make a number of editorial revisions thereto. These editorial revisions have been made to place the claims in better U.S. form. Further, these editorial revisions have not been made to narrow the scope of protection of the claims, or to address issues related to patentability, and therefore, these amendments should not be construed as limiting the scope of equivalents of the claimed features offered by the Doctrine of Equivalents.

Claims 6, 7, 9 and 10 were objected to for being duplicates of claims 5 and 8. Withdrawal of this objection is respectfully requested since, as mentioned above, claims 6, 7, 9 and 10 have been cancelled without prejudice or disclaimer of the subject matter contained

therein.

Claims 11-13 and 16-19 were rejected under 35 U.S.C. § 101 for failure to recite statutory subject matter. This rejection of claims 16-19 is considered moot based on the above-mentioned cancellation of claims 16-19. Furthermore, claims 11-13 have been amended to recite a device comprised of units that produce a concrete, useful and tangible result. Therefore, it is submitted that the Examiner's rejection under 35 U.S.C. § 101 is inapplicable to amended claims 11-13.

Claims 13 and 19 were rejected under 35 U.S.C. § 102(e) as being anticipated by Wong et al. (U.S. 6,968,364). Further, claims 1-12 and 14-18 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Wong in view of Mori et al. (U.S. 2004/021093). These rejections are believed clearly inapplicable to amended claims 1 and 11-13 and new claims 20-23 for the following reasons.

Independent claim 1 recites a system including a terminal device and a recording server. Further, claim 1 recites that the recording server includes (1) a rule generating unit operable to generate (and transmit to the terminal device) a rule for selecting, from a plurality of user profiles, a user profile to which a user of a terminal device belongs. In addition, claim 1 recites that the terminal device includes (2) a selecting unit that selects the user profile to which the user belongs based on the rule generated/transmitted by the recording server. Moreover, claim 1 recites that (3) each user profile, of the plurality of user profiles, contains attribute information that indicates a different group of a plurality of groups belonging to a particular category. Claim 1 also recites that the terminal device includes (4) a transmission unit that transmits, to the recording server, a program ID (identifying a program to be recorded that was designated by the

user) and associated user profile information identifying the user profile selected by the selecting unit. Furthermore, claim 1 recites that the recording server includes (5) a counting unit operable to count, for each of the plurality of user profiles, a number of times each respective program ID included in the received recording instruction information is associated with user profile information identifying a respective user profile. Wong and Mori, or any combination thereof, fail to disclose or suggest above-mentioned distinguishing features (1)-(5) as recited in independent claim 1.

Rather, Wong teaches that a user of a remote computer 30 transfers selection criteria (e.g., criteria describing programs which interest a user) to a server 20 (see col. 29, lines 47-52 and 59-67; and col. 30, lines 7-10). Further, Wong teaches that the selection criteria is used to select programs contained in a program database 668 of the server 20 (see Figs. 12 and 13; and col. 30, lines 14-21).

Thus, in view of the above, it is clear that Wong teaches that selection criteria, which is used to select programs from the server, is transferred from a user's remote computer to the server, but fails to disclose or suggest (1) a recording server including a rule generating unit operable to generate a rule for selecting, from a plurality of user profiles, a user profile to which a user of a terminal device belongs and (2) a terminal device including a selecting unit that selects the user profile to which the user belongs based on the rule generated and received from the recording server, as required by claim 1.

It is noted that the above-mentioned rejection relies on the user profile database 678 of Wong for teaching the user profile as recited in claim 1. However, Wong merely teaches that the database 678 stores a user profile that stores information about a user and information

associating a PVR with a user (see col. 33, lines 39-50).

Thus, it is evident that Wong teaches that the user profile stores information about a user, but fails to disclose or suggest that (3) each user profile contains attribute information that indicates a different group of a plurality of groups belonging to a particular category, as required by claim 1.

In addition, it is noted that the above-mentioned rejection relies on col. 12, lines 56 and 57 for teaching transmitting recording instruction information including a program ID identifying a program to be recorded and associated user profile information identifying the user profile selected by the selecting unit.

Rather, Wong merely teaches that a remote control 120 of a user transmits a signal for selecting audio and/or visual programs, etc. (see col. 12, lines 56-67). Thus, it is clear that Wong fails to disclose or suggest (4) that the terminal device includes a transmission unit that transmits, to the recording server, a program ID (identifying a program to be recorded that was designated by the user) and associated user profile information identifying the user profile selected by the selecting unit according to the rule generated and transmitted by the recording server, as required by claim 1. Further, in view of the above, it is apparent that although Wong teaches that a remote control is used to identify a program for viewing, Wong also fails to disclose or suggest that (3) each user profile (selected by the terminal device according to the rule generated and transmitted from the recording device), of the plurality of user profiles, contains attribute information that indicates a different group of a plurality of groups belonging to a particular category, as recited by claim 1.

Furthermore, please note that the above-described 35 U.S.C. § 103(a) rejection

acknowledges that Wong fails to disclose or suggest the limitations of the counting unit, as recited in claim 1. In light of the above, the 35 U.S.C. § 103(a) rejection relies on Mori for teaching the limitations of the counting unit which are lacking from Wong.

However, Mori merely teaches counting a number of programs viewed/recorded for each genre and counting a number of programs that have been broadcast for each genre (see Fig. 27 and paragraph [0234]).

Thus, in view of the above, it is clear that Mori teaches tracking a cumulative total of a number of programs recorded/viewed for each genre, but fails to disclose or suggest that (5) the recording server includes a counting unit operable to count, for each of the plurality of user profiles, a number of times each respective program ID included in the received recording instruction information is associated with user profile information identifying a respective user profile, as required by claim 1.

The features of the above-described counting unit, as recited in claim 1, are defined in the specification. For example, Fig. 9 illustrates counting, for each of the plurality of user profiles, a number of times each respective program ID included in the received recording instruction information is associated with user profile information identifying a respective user profile (reference to any specific portions of the present application is provided only for illustrative purposes, and is not intended to otherwise limit the scope of the claims to any particular embodiment). Specifically, it is clear that claim 1 requires that for each user profile a number of times each program ID is recited is counted.

Thus, in view of the above, it is clear that the cumulative total of programs viewed/recorded per genre, as disclosed by Mori, fails to disclose or suggest the features of the

counting unit (e.g., that for each user profile a number of times each program ID is received is counted), as recited by claim 1 and as explained above.

Therefore, because of the above-mentioned distinctions it is believed clear that claim 1 would not have been obvious or result from any combination of Wong and Mori. Furthermore, there is no disclosure or suggestion in Wong and/or Mori or elsewhere in the prior art of record which would have caused a person of ordinary skill in the art to modify Wong and/or Mori to obtain the invention of independent claim 1. Accordingly, it is respectfully submitted that independent claim 1 is clearly allowable over the prior art of record.

Amended independent claims 11 and 13 are directed to a recording server and a terminal device, respectively and each recite features that correspond to the above-mentioned distinguishing features of independent claim 1 (e.g., rule generating unit, recording instruction information, user profile, counting unit, selecting unit). Thus, for the same reasons discussed above, it is respectfully submitted that independent claims 11 and 13 and claims 12 and 20-23 that depend therefrom are allowable over Wong and Mori.

In view of the above amendments and remarks, it is submitted that the present application is now in condition for allowance and an early notification thereof is earnestly requested. The Examiner is invited to contact the undersigned by telephone to resolve any remaining issues.

Respectfully submitted,

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## DESCRIPTION

### **NETWORK RECORDING SYSTEM, RECORDING SERVER, AND TERMINAL DEVICE**

#### BACKGROUND OF THE INVENTION

##### ~~Technical Field~~ 1. Field of the Invention

5           The present invention relates to a network system including terminal devices and a recording server that are connected to a network. The present invention especially relates to a technique to analyze a general tendency relating to recording instructions, based on recording instruction information  
10       transmitted from the terminal devices to the recording server.

##### ~~Background Art~~ 2. Description of the Related Art

~~Nowadays~~ Presently, various types of video distribution services using a network such as the Internet and a Local Area  
15       Network (LAN) are provided. One of such services is a program recording service.

          The following explains the program recording service. A recording center receives, via a network, information relating to an instruction to record a program (hereinafter referred to  
20       as "recording instruction information") from a terminal device (e.g., a mobile telephone) owned by a user of the service. A



recording server included in the recording center then records the program in place of the terminal device. The recording server transmits data of the recorded program to the terminal device, via the network, upon receiving a request from the terminal  
5 device.

Here, a provider of the program recording service may use recording instruction information transmitted from terminal devices, in order to ~~know~~ understand a general tendency relating to recording instructions or to provide a program recommendation  
10 service of recommending programs which match preferences of individual users.

In this case, the provider of the program recording service presents a privacy policy to the users and obtains the users' agreement on the policy, before providing the program recording  
15 service. Such a privacy policy shows how information relating to the users' privacy such as recording instruction information is collected, for what purpose the collected information is used, and how the collected information is protected.

However, privacy awareness has been recently increasing.  
20 This tends to increase the number of users who do not want the service provider to analyze their preferences on programs.

Therefore, if the service provider analyzes preference about programs of each particular user, i.e., knows that a user A likes animated cartoons, potential users may be discouraged from using the program recording service.

5

#### ~~Disclosure~~ Brief Description of the Invention

The present invention was made considering those who have high privacy awareness. It is a first object of the present invention to provide a network recording system in which a service  
10 provider makes various analyses on a tendency relating to recording instructions based on recording instruction information without identifying individual users, and various techniques relating to the system.

It is a second object of the present invention to provide  
15 a network recording system which recommends programs which match preferences of individual users based on the result of the analyses ~~on~~ of tendencies ~~the tendency~~ relating to recording instructions, and various techniques relating to the system.

The first object can be achieved by a network recording  
20 system including a terminal device and a recording server which are connected to a network. The terminal device comprises a

receiving unit operable to receive a designation of a program to be recorded, from a user, a selecting unit operable to select a user profile to which the user belongs, out of a plurality of user profiles, and a transmitting unit operable to transmit  
5 recording instruction information to the recording server, where the recording instruction information includes a combination of a program ID identifying the program to be recorded and user profile information showing the user profile to which the user belongs. The recording server comprises a reception unit  
10 operable to receive the recording instruction information from the terminal device, a recording unit operable to record the program identified by the program ID included in the recording instruction information, and a counting unit operable to count, for each of the plurality of user profiles, a number of times  
15 each program ID has been received by the reception unit.

The first object can be achieved by a recording server comprising (i) a reception unit operable to receive, from an external device, recording instruction information including a combination of a program ID identifying a program and user  
20 profile information indicating a user profile to which a user belongs, (ii) a recording unit operable to record the program identified by the program ID included in the recording

instruction information, and (iii) a counting unit operable to count, for each of a plurality of user profiles, a number of times each program ID has been received by the reception unit.

5           The first object can be achieved by a designated program counting system including a terminal device and a server which are connected to a network. The terminal device comprises a receiving unit operable to receive a designation of a program, from a user, a selecting unit operable to select a user profile  
10   to which the user belongs, out of a plurality of user profiles, and a transmitting unit operable to transmit instruction information to the server~~7.~~ ~~where the~~ The instruction information includes a combination of a program ID identifying the designated program and user profile information showing  
15   the user profile to which the user belongs. The server comprises a reception unit operable to receive the instruction information from the terminal device, and a counting unit operable to count, for each of the plurality of user profiles, a number of times each program ID has been received by the reception unit.

20           The first object can be achieved by a recording-instructed program counting method comprising steps of receiving recording instruction information including a combination of a program

ID and user profile information, recording a program identified by the program ID included in the recording instruction information, and counting a number of times, for each of a plurality of user profiles, each program ID has been received  
5 in the receiving step.

The first object can be achieved by a computer-readable program ~~to cause a~~ causing a computer to execute a program counting operation (method) comprising steps of receiving recording instruction information including a combination of a program  
10 ID and user profile information, recording a program identified by the program ID included in the recording instruction information, and counting a number of times, for each of a plurality of user profiles, each program ID has been received in the receiving step.

15 The first object can be achieved by a computer-readable storage medium storing a computer-readable program which causes a computer to execute a program counting operation (method). The program counting operation comprises steps of receiving recording instruction information including a combination of  
20 a program ID and user profile information, recording a program identified by the program ID included in the recording instruction information, and counting a number of times, for

each of a plurality of user profiles, that each program ID has been received in the receiving step.

The first object can be achieved by an integrated circuit for use in a recording server including (i) a transmission unit  
5 operable to transmit, to a terminal device, a rule to select, out of a plurality of user profiles, a user profile to which a user belongs, (ii) a reception unit operable to receive recording instruction information including a combination of a program ID identifying a program to be recorded and user profile  
10 information indicating the user profile to which the user belongs, and (iii) a recording unit operable to record the program indicated by the program ID included in the recording instruction information. The integrated circuit comprises a rule generating unit operable to generate the rule, and a counting unit operable  
15 to count, for each of the plurality of user profiles, a number of times each program ID has been received by the reception unit.

Here, a user profile is attribute information indicating a different one of a plurality of groups that belong to a  
20 particular category. The user profile does not uniquely identify a user or a terminal device.

According to the above-mentioned construction, a service

provider counts, for each user profile, the number of times each program ID has been received by the reception unit. In this way, the service provider can analyze a tendency relating to recording instructions, for each user profile. Thus, the service provider does not know preference of each particular user. As a result, even those who have high privacy awareness are motivated to use the program recording service.

Here, the recording server may further ~~comprises~~ comprise a rule generating unit operable to generate a rule to select the user profile to which the user belongs, and a transmission unit operable to transmit the generated rule to the terminal device. The terminal device may further ~~comprises~~ comprise a rule storing unit operable to receive and store the rule transmitted from the recording server, and the selecting unit may select the user profile to which the user belongs, based on the rule stored in the rule storing unit.

According to this construction, the user profile to which the user belongs is determined based on the rule generated in the recording server. Since the recording server is managed by the service provider, the service provider can make various analyses ~~on~~ of a tendency relating to recording instructions for each user profile.

The second object can be achieved in the following manner.

The recording server further comprises a selection unit operable to select a plurality of programs in one-to-one correspondence with the plurality of user profiles, based on a result of the counting performed by the counting unit. In addition, the transmission unit generates selected program information and transmits the selected program information to the terminal device, where the selected program information shows a one-to-one correspondence between (i) a plurality of pieces of program information that indicate the plurality of programs selected by the selection unit and (ii) a plurality of pieces of user profile information that represent the plurality of user profiles. In addition, the terminal device further comprises a presenting unit operable to receive the selected program information from the recording server, and present the selected program information to the user.

The second object can be achieved by a terminal device comprising (i) a receiving unit operable to receive a designation of a program to be recorded from a user, (ii) a selecting unit operable to select a user profile to which the user belongs, out of a plurality of user profiles, (iii) a transmitting unit operable to transmit recording instruction information to an



external device, where the recording instruction information includes a program ID identifying the program to be recorded and user profile information indicating the user profile to which the user belongs, (iv) a reception unit operable to receive, 5 from the external device, selected program information showing a one-to-one correspondence between ~~(i)~~ (a) a plurality of pieces of program information that respectively indicate programs and ~~(ii)~~ (b) a plurality of pieces of user profile information which respectively represent the plurality of user profiles, and (v) 10 a presenting unit operable to extract a piece of program information corresponding to the user profile to which the user belongs, from the selected program information and present the extracted piece of program information to the user.

The second object can be achieved by an integrated circuit 15 for use in a terminal device including a receiving unit operable to receive, from an external device, a rule to select, out of a plurality of user profiles, a user profile to which a user belongs. The integrated circuit comprises a rule storing unit operable to store the rule received by the receiving unit, and 20 a selecting unit operable to select the user profile to which the user belongs, out of the plurality of user profiles, based on the rule stored in the rule storing unit.

According to these constructions, the user can ~~know~~be  
made aware of a program which matches ~~his~~their preference,  
based on the selected program information presented on the  
terminal device.

5        Here, the presenting unit may extract a piece of program  
information corresponding to the user profile to which the user  
belongs, from the selected program information, and present  
the extracted piece of program information to the user.

According to this construction, the terminal device only  
10   presents a program which corresponds to the user profile to  
which the user of the terminal device belongs. This will spare  
the user the trouble of searching programs corresponding to  
the user profile to which the user belongs.

Here, the terminal device may further comprise a program  
15   guide information obtaining unit operable to obtain program  
guide information showing program IDs and corresponding genre  
IDs that represent program genres of programs identified by  
the program IDs, and a history storing unit operable to, every  
time the receiving unit receives a designation of a program  
20   to be recorded, determine a genre ID corresponding to a program  
ID identifying the program to be recorded with reference to  
the program guide information, and count and record therein

a number of times the genre ID is designated by the user. The selecting unit may select the user profile to which the user belongs, based on a result of the counting performed by the history storing unit and the rule stored in the rule storing  
5 unit.

According to this construction, a program recording instruction issued by the user automatically determines the user profile to which the user belongs.

Here, the receiving unit may receive an input of personal  
10 information from the user, and the selecting unit may select the user profile to which the user belongs, based on the personal information and the rule stored in the rule storing unit.

According to this construction, personal information the user inputs to the terminal device determines the user profile  
15 to which the user belongs.

#### Brief Description Of The Drawings

Fig. 1 illustrates a construction of a network recording system relating to an embodiment of the present invention.

20 Fig. 2 is a functional block diagram illustrating a terminal device.

Fig. 3 is a functional block diagram illustrating a

recording server.

Fig. 4 illustrates an example of program guide information.

Fig. 5 illustrates an example of a channel table.

Fig. 6 illustrates an example of a GUI screen displayed  
5 on a display unit of the terminal device (shown in Fig. 2).

Fig. 7 illustrates an example of a recording instruction  
history which is stored in the terminal device.

Fig. 8 illustrates a data construction of transmission  
information transmitted from the terminal device to the  
10 recording server.

Fig. 9 illustrates a concrete example of program ID  
counting information.

Fig. 10 illustrates a concrete example of selected program  
information.

15 Fig. 11 is a flow chart to illustrate an operation of the  
terminal device.

Fig. 12 is a flow chart to illustrate an operation of the  
terminal device.

Fig. 13 is a flow chart to illustrate an operation of the  
20 terminal device.

Fig. 14 illustrates constructions of a recording  
management server and a recording device included in a network

recording system relating to a modification example of the present invention.

~~Best Mode for Carrying Out~~ Detailed Description of the Invention

5           The following describes a network recording system which is an embodiment of the present invention, with reference to the attached figures.

(1. CONSTRUCTION OF THE NETWORK RECORDING SYSTEM 1)

10           Fig. 1 illustrates a construction of a network recording system 1.

          The network recording system 1 includes a recording server 2, terminal devices 3, 4 and 5, a network 6. The number of terminal devices in the network recording system 1 is not limited to three, and can be several thousand to several ten thousand. Likewise, the number of recording servers is not limited to one, and can be several thousand to several ten thousand.

          The network 6 is a LAN or the Internet.

20           Each of the recording server 2, and the terminal devices 3, 4 and 5 is a computer constituted by hardware such as a CPU, an input/output device (e.g., a reception tuner, a communication modem, a User Interface (UI) circuit), a memory and a hard disk.

(1.1. CONSTRUCTION OF THE TERMINAL DEVICE 4)

The following part describes functional units of each of the terminal devices 3, 4 and 5. Fig. 2 is a functional block diagram illustrating the terminal device 4.

The terminal device 4 includes an operating unit 41, a transmission information generating unit 42, a recording instruction history storing unit 43, a profile selecting unit 44, a profile selecting rule storing unit 45, a network communication unit 46, a profile selecting rule obtaining unit 47, a selected program information obtaining unit 48, a recorded data obtaining unit 49, a recorded data storing unit 50, a selected program information storing unit 51, a recommended program notifying data generating unit 52, a playback unit 53, a display unit 54, a program guide information obtaining unit 55, and a program guide information storing unit 56.

The terminal devices 3 and 5 have the same functional units as the terminal device 4, and therefore are not explained here.

The functional units of the terminal device 4 are realized in such a manner that a CPU executes a terminal device control program stored in a memory or a hard disk.

As shown in Fig. 2, the profile selecting unit 44, the profile selecting rule storing unit 45, and the profile selecting rule obtaining unit 47 are formed as an integrated circuit.

The network communication unit 46 has a function of communicating with other devices connected to the network 6. The network communication unit 46 is realized by hardware, such as a LAN card or a modem.

5       The program guide information obtaining unit 55 has a function of obtaining program guide information via the network 6 from the recording server 2. The program guide information storing unit 55 is a memory area for storing the obtained program guide information. The program guide information is described  
10   in detail later.

The operating unit 41 has a function of receiving various kinds of user instructions through the user's button operations or the like. For example, the terminal device 4 displays a recording program selection screen of a Graphical User Interface  
15   (GUI) on the display unit 54, so as to receive a recording instruction through the user's operations of a pointing device.

A GUI is realized by arranging, for example, icons and buttons on a display screen. The icons and buttons are displayed, for example, as a letter or a picture and each have a specific  
20   property. Personal computers and various kinds of audio-video devices, for example, receive operations from users and present information to users, through GUIs.

Fig. 6 illustrates an example of a GUI screen displayed on the display unit 54 in the terminal device 4 to receive an instruction from a user to instruct recording a program. Fig. 6 shows a screen 601 illustrating a program guide for a time period from 17:00 to 19:00, XYZ Television Company, and Channel 6 in the Osaka region.

A program guide 611 is generated based on the program guide information and a channel table (mentioned later), and displayed on the screen 601. When a program content section 612 is selected with a pointer, a recording instruction window 613 is displayed.

The recording instruction window 613 has three GUI buttons, which are a recording instruction button "RECORD", an image quality selecting button, and a related data selecting button. The user can designate the image quality of program data to be recorded, by selecting one of a plurality of image quality options displayed when the image quality selecting button is pressed.

Also, the user can select whether related data should be generated regarding recorded program data by selecting one of YES and NO options displayed when the related data selecting button is pressed.

Furthermore, the user can issue a recording instruction



for the program to the terminal device 4, by pressing the recording instruction button.

The operating unit 41 receives various kinds of instructions from the user. The operating unit 41 sends a recording instruction and a playback instruction from the user to the transmission information generating unit 42.

The transmission information generating unit 42 has a function of generating recording instruction information or playback instruction information to be transmitted to the recording server 2, based on a recording or playback instruction received from the user.

The recording instruction information includes user profile information indicating a user profile selected by the profile selecting unit 44 (described later).

When generating recording instruction information, the transmission information generating unit 42 stores information made up of generation date and time, a program ID, and a genre ID in the recording instruction history storing unit 43. The transmission information generating unit 42 sends recording or playback instruction information to the network communication unit 46.

The recording instruction history storing unit 43 is a

memory area for storing a history of recording instructions.

The profile selecting rule obtaining unit 47 has a function of obtaining a profile selecting rule transmitted from the recording server 2.

5        Here, a user profile is attribute information indicating a different one of a plurality of groups that belong to a specific category. A user profile does not uniquely identify a user or a terminal device. For example, information indicating an attribute such as a favorite program genre, or age may be used  
10 as a user profile.

In the case of program genre, animated cartoons, news, variety shows and the like may be used as user profiles. In the case of age, 10-19 years of age, 20-29 years of age, 30-39 years of age and the like may be used as user profiles.

15        Alternatively, information indicating gender or inhabited area may be used as user profiles. Also, different kinds of attribute information may be combined to define a user profile. For example, attributes such as an inhabited area, age, gender, and a favorite program genre may be combined. If  
20 such is the case, for example, a user profile "a male who is in his twenties, lives in Osaka and likes animated cartoons", or a user profile "a male who is in his fifties, lives in Kyoto,

and likes samurai dramas" may be used.

Furthermore, two or more different favorite program genres may be combined, to define, for example, a user profile ~~representing~~ indicating that favorite program genres are sports and movies. Also, attributes indicating gender and age may be combined, to define, for example, a user profile representing a couple of a male at age of 25-35 years and a female at age of 20-25 years.

A profile selecting rule is used to select a user profile to which the user belongs, from a plurality of user profiles. There are presumably several different profile selecting rules. The present embodiment employs the following rule. A history of recording instruction received from the user (hereinafter referred to as a recording instruction history) is reviewed, to determine which genre ID appears the largest number of times in the history. A user profile corresponding to the determined genre ID is selected as the user profile to which the user belongs.

For example, it is assumed that a genre ID 1 indicates news. If the number of recording instructions for programs belonging to the genre ID 1 is the largest of all genres, a user profile 1 which represents preference for news is selected as a user profile to which the user belongs.

If more than one genre IDs appear the largest number of times in the recording instruction history, a user profile corresponding to a genre ID which appears the most recently among the genre IDs in the history is set as the user profile to which the user belongs, according to the rule used in the present embodiment.

The profile selecting rule storing unit 45 is a memory area for storing the profile selecting rule obtained by the profile selecting rule obtaining unit 47.

10       The profile selecting unit 44 has a function of selecting a user profile to which the user belongs, based on the profile selecting rule stored in the profile selecting rule storing unit 45. The selected user profile is sent to the transmission information generating unit 42 and the recommended program  
15       notifying data generating unit 52 as user profile information.

The selected program information obtaining unit 48 has a function of obtaining selected program information transmitted from the recording server 2. The selected program information is described in detail later.

20       The selected program information storing unit 51 is a memory area for storing the selected program information obtained by the selected program information obtaining unit

48.

The recommended program notifying data generating unit 52 has a function of extracting program information that corresponds to the user profile information sent from the profile selecting unit 44, from the selected program information stored in the selected program information storing unit 51. The recommended program notifying data generating unit 52 generates recommended program notifying data including the extracted program information. The recommended program notifying data is caption information, and is sent to the playback unit 53.

The recorded data obtaining unit 49 has a function of obtaining recorded data transmitted from the recording server 2. The recorded data obtaining unit 49 obtains the recorded data using either a download method or a streaming method. The recorded data obtaining unit 49 stores the recorded data in the recorded data storing unit 50.

The recorded data storing unit 50 is a memory area for storing the recorded data obtained by the recorded data obtaining unit 49.

The playback unit 53 has a function of reading and playing back the recorded data stored in the recorded data storing unit 50. When receiving the recommended program notifying data, which

is caption information, from the recommended program notifying data generating unit 52, the playback unit 53 displays a caption indicated by the recommended program notifying data on a screen on which the recorded data is displayed.

5           The display unit 54 has a function of outputting video and audio played back by the playback unit 53.

#### (1.2. CONSTRUCTION OF THE RECORDING SERVER 2)

The following part describes functional units of the recording server 2 with reference to Fig. 3.

10           The recording server 2 includes a network communication unit 20, an extracting unit 21, a terminal management unit 22, a recording unit 23, a broadcast receiving unit 24, a program guide information storing unit 25, a recorded data storing unit 26, a sending unit 27, a counting unit 28, a selecting unit  
15 29, a selected program information generating unit 30, and a profile selecting rule generating unit 31. The functional units of the recording server 2 are realized in such a manner that a CPU executes a recording server control program stored in a memory or a hard disk.

20           As shown in Fig. 3, the counting unit 28 and the profile selecting rule generating unit 31 are formed as an integrated circuit.

The network communication unit 20 has a function of communicating with other devices connected to the network 6. The network communication unit 20 is realized by hardware such as a LAN card or a modem.

5           The extracting unit 21 has a function of extracting a program ID and user profile information from recording instruction information transmitted from any of the terminal devices 3, 4 and 5. The extracted program ID and user profile information are sent to the counting unit 28. The recording  
10 instruction information is sent to the terminal management unit 22.

The terminal management unit 22 has a function of managing recording instruction information and playback instruction information transmitted from each of the terminal devices 3,4  
15 and 5. The terminal management unit 22 sends the recording instruction information to the recording unit 23, and the playback instruction information to the sending unit 27.

The broadcast receiving unit 24 has a function of receiving digital broadcasts and demodulating broadcast waves. The digital  
20 broadcast referred to here uses the MPEG-2-Transport Stream (TS) method, which is defined by ISO/IEC 13818. A TS includes the program guide information and the like in addition to program

data.

The program guide information includes a plurality of pieces of table information, which include Program Specific Information (PSI) and Service Information (SI). PSI and SI are  
5 each defined by the MPEG-2 standard.

A TS is formed by TS packets which each have a payload and a header. The header stores identifying information to identify the contents of the payload. The broadcast receiving unit 24 separates and extracts particular data based on this  
10 identifying information in a header. The program guide information is extracted and sent to the program guide information storing unit 25. Program data is extracted and sent to the recording unit 23.

The recording unit 23 performs a recording operation of  
15 a program identified by the program ID included in the recording instruction information. The recording operation includes not only recording of broadcasted data in its original format, but also conversion of a format of recorded data into a format desired by a user. For example, the recording unit 23 converts program  
20 data in the MPEG-2 format into data in the MPEG-4 format. Data of the recorded program, that is to say, recorded data is stored in the recorded data storing unit 26.



The recorded data storing unit 26 is a memory area for storing recorded data.

The counting unit 28 has a function of receiving combinations of a program ID and user profile information from the extracting unit 21 and counting the number of times, for each user profile, each program ID has been received. The counting unit 28 sends program ID counting information, which is the result of the above-mentioned counting, to the selecting unit 29 at predetermined time intervals.

Fig. 9 illustrates a concrete example of the program ID counting information obtained by the counting unit 28 as a result of counting the number of times, for each user profile, each program ID has been received in the predetermined time.

Program ID counting information 901 is divided into three pieces of information, which respectively correspond to the user profiles 1, 2 and 3. The program ID counting information 901 shows the number of times, for each user profile, each program ID has been received.

The selecting unit 29 has a function of selecting, for each user profile, a program ID that is designated by recording instructions the largest number of times, based on the program ID counting information sent from the counting unit 28 at

predetermined time intervals. The selecting unit 29 sends the selected program IDs corresponding to user profiles to the selected program information generating unit 30.

The selected program information generating unit 30 has  
5 a function of generating selected program information. The selected program information shows a one-to-one correspondence between a plurality of pieces of program information and a plurality of pieces of user profile information. Program information includes start date and time of a program indicated  
10 by a program ID selected for a corresponding user profile by the selecting unit 29, a recommendation text and the like.

The recording server 2 stores a plurality of recommendation text templates in a memory or a hard disk. The program information is generated by adding information such as a program genre of  
15 a program selected by the selecting unit 29, a title of the program, a name of a broadcasting station for the program, a channel number for the program, and the start date and time of the program, to a recommendation text template that is randomly selected. The information such as the program genre of the  
20 selected program, the title of the program, the name of the broadcasting station for the program, and the start date and time of the program can be extracted from the program guide

information using a program ID identifying the program as a key.

Fig. 10 illustrates a concrete example of the selected program information generated by the selected program

5 information generating unit 30. In selected program information 1001, a recommendation text template corresponding to a user profile 1 is "The recommended ooo is ●●●! (\*\*\*)". The program information is generated, by entering the program genre of the selected program into ooo, the title of the program into ●●●,  
10 and the broadcasting station and the start date and time of the program into \*\*\*. The selected program information is sent to the sending unit 27.

The profile selecting rule generating unit 31 has a function of generating a profile selecting rule, based on a  
15 profile selecting rule template prestored in a memory or a hard disk in the recording server 2 and information input by a service provider. The profile selecting rule is sent to the sending unit 27.

The sending unit 27 has a function of reading recorded  
20 data corresponding to playback instruction information sent from the terminal management unit 22, to transmit, using a protocol such as the HyperText Transfer Protocol (HTTP) or the

File Transfer Protocol (FTP), the read recorded data to a terminal device which has issued the playback instruction. Also, the sending unit 27 has a function of transmitting, for example, the program guide information stored in the program guide information storing unit 25, the profile selecting rule sent from the profile selecting rule generating unit 31, or the selected program information, using the above-mentioned protocol. Also, if the program indicated by the playback instruction information is not recorded, the sending unit 27 transmits error information to the terminal device which has transmitted the playback instruction information.

## (2. DATA)

The following part describes various kinds of data.

Fig. 4 illustrates a concrete example of the program guide information. Program guide information 401 is made up of item information which includes a channel ID, a television station, a date of broadcast, a program ID, a start time, an end time, a genre ID, and a program title.

Fig. 5 illustrates a concrete example of the channel table. A channel table 501 shows a one-to-one correspondence between channel numbers that each represent a television station in the Osaka region and channel IDs.

Fig. 7 illustrates a concrete example of the recording instruction history stored in the recording instruction history storing unit 43. A recording instruction history 701 stores a plurality of pieces of information each of which are ~~each~~ made up of generation date and time of the recording instruction information, a program ID of a program to be recorded, a genre ID of the program belongs, in chronological order.

Fig. 8 illustrates a data construction of the recording instruction information transmitted from the terminal device 4 to the recording server 2.

Recording instruction information 801 is made up of a destination address, a source address, a terminal ID, a program ID, user profile information and the like.

### (3. OPERATION)

The following part describes an operation of the network recording system 1.

Firstly, an operation of the terminal device 4 from reception of a recording instruction from the user to transmission of recording instruction information to the recording server 2 is explained with reference to the flow chart shown in Fig. 11.

When the operating unit 41 in the terminal device 4 receives

a recording instruction from the user (step S1: YES), the transmission information generating unit 42 generates recording instruction information, and adds information about the generation to the recording instruction history stored in the recording instruction history storing unit 43 (step S2).

After this, based on a profile selecting rule, the profile selecting unit 44 selects a user profile corresponding to a genre ID which appears in the recording instruction history the largest number of times as a user profile to which the user belongs. When more than one genre IDs appear the largest number of time in the recording instruction history, the profile selecting unit 44 selects a user profile corresponding to a genre ID, among the genre IDs, which appears in the recording instruction history the most recently as the user profile to which the user belongs (step S3).

The terminal device 4 transmits, to the recording sever 2, the recording instruction information, which includes the program ID of the program indicated by the recording instruction, from the user and user profile information indicating the user profile that has been selected by the profile selecting unit 44 (step S4).

Secondly, an operation of the recording server 2 from

reception of the recording instruction information to transmission of selected program information to each of the terminal devices 3, 4 and 5 is explained with reference to the flow chart shown in Fig. 12.

5           When the recording server 2 receives the recording instruction information from the terminal device 3, 4 or 5 (step S11: YES), the extracting unit 21 extracts the combination of the program ID and the user profile information included in the recording instruction information (step S12).

10           The combination of the extracted program ID and user profile information are sent to the counting unit 28. The counting unit 28 counts the number of times, for each user profile, each program ID has been received (step S13).

          The counting unit 28 sends program ID counting information, 15 which is obtained as a result of the counting, to the selecting unit 29 at predetermined time intervals. Therefore, when the predetermined time has elapsed (step S14: YES), the selecting unit 29 selects a program which is designated by recording instructions the largest number of times for each user profile 20 (step S15). If the predetermined time has not elapsed (step S14: NO), the operation goes back to the step S11.

          The selected program information generating unit 30

receives program IDs of programs selected in the step S15, and generates selected program information (step S16).

The sending unit 27 transmits the selected program information to each of the terminal devices 3, 4 and 5 using a predetermined protocol (step S17).

Lastly, an operation of the terminal device 4 from reception of the selected program information to display of a caption for a recommended program is described, with reference to the flow chart shown in Fig. 13.

10 When the terminal device 4 receives the selected program information from the recording server 2 (step S21: YES), the recommended program notifying data generating unit 52 extracts, from the selected program information, program information corresponding to the user profile information received from  
15 the profile selecting unit 44, and generates recommended program notifying data including the extracted program information (step S22).

The recommended program notifying data is sent to the playback unit 53. The playback unit 53 displays a caption  
20 indicated by the recommended program notifying data on a display screen on which recorded data is played back (step S23).

(4. MODIFICATION EXAMPLE)



The above-described embodiment may be modified in the following manner. The functional units of the recording server 2 shown in Fig. 3 may be realized by a plurality of devices, for example, by a recording management device 7, and recording devices 8 and 9 as shown in Fig. 14.

The recording management device 7 manages the recording devices 8 and 9. When receiving recording instruction information from the terminal device 3, 4 or 5, the recording management device 7 has the recording devices 8 and 9 perform a recording operation of a program designated by the recording instruction information. Furthermore, the recording management device 7 extracts a combination of a program ID and user profile information from the recording instruction information, so as to count, for each user profile, the number of times each program ID has been received. The recording management device 7 includes a network communication unit 71, an extracting unit 72, a terminal management unit 73, a recording device managing unit 74, a program guide information storing unit 75, a sending unit 76, a profile selecting rule generating unit 77, a counting unit 78, a selecting unit 79, a selected program information generating unit 80, and a broadcast receiving unit 81.

The functional units of the recording management device

7 are realized in such a manner that a CPU executes a control program for a recording management device stored in a memory or a hard disk.

The functional units except for the recording device managing unit 74 are the same as the network communication unit 20, the extracting unit 21, the terminal management unit 22, the recording unit 23, the broadcast receiving unit 24, the program guide information storing unit 25, the recorded data storing unit 26, the sending unit 27, the counting unit 28, the selecting unit 29, the selected program information generating unit 30, and the profile selecting rule generating unit 31 included in the recording server 2. Therefore, those functional units are not explained.

As shown in Fig. 14, the extracting unit 72, the profile selecting rule generating unit 77, and the counting unit 78 are formed as an integrated circuit.

The recording device managing unit 74 manages a plurality of recording devices each of which records programs on a particular channel. The recording device managing unit 74 has a function of performing a recording control and a data transmission control on the recording devices 8 and 9 connected to the network 6.

Fig. 14 only illustrates the two recording devices 8 and 9. However, the number of recording devices connected to the network 6 may be several ten so as to be equal to the number of channels. The recording devices 8 and 9 have the same functions.

5 As shown in Fig. 14, the recording device 8 includes a network communication unit 82, a recording unit 83, a broadcast receiving unit 84, a recorded data storing unit 85, and a sending unit 86. These functional units are the same as the network communication unit 20, the recording unit 23, the broadcast  
10 receiving unit 24, the recorded data storing unit 26, and the sending unit 27 included in the recording server 2 respectively.

The recording devices 8 and 9 performs a recording operation of a program and transmits recorded data, in accordance with an instruction from the recording management device 7.

#### 15 (5. OTHER INFORMATION)

The present invention is not limited to the embodiment, and includes the following modifications.

(1) A profile selecting rule may be defined so as that a user profile to which the user belongs is selected based on  
20 personal information input by the user. For example, a case is assumed where a user profile to which the user belongs is selected based on user's age. If the user inputs age information

indicating 25 years of age, a user profile of 20-29 years of age is selected as a user profile to which the user belongs. If the user inputs age information indicating 36 years of age, a user profile of 30-39 years of age is selected as a user profile  
5 to which the user belongs.

(2) According to the above-described embodiment, the terminal devices 3, 4 and 5 receive a recording instruction from the user. However, the terminal devices 3, 4 and 5 may receive a designation of a program from the user. In this case,  
10 the present invention may realize a designated program counting system including a plurality of terminal devices and a server.

The terminal devices included in the system each transmit designation information containing a combination of a program ID of the program designated by the user and user profile  
15 information, to the server. The server receives the designation information from each of the terminal devices, and counts, for each user profile, the number of times each program ID has been received.

Here, the designation of the program from the user may  
20 be made in order to obtain the program from the server, or to vote on a popularity poll about programs.

(3) The present invention may include a program counting

method including the procedure in which the recording server  
2 counts the number of times, for each user profile, each program  
ID has been received (Fig. 9) as described in the embodiment,  
and a computer-readable program to have the recording server  
5 2 perform a program counting operation (method). The  
computer-readable program can be distributed in a state of being  
stored in storage media or via various kinds of communication  
paths. Such storage media include IC cards, optical disks,  
flexible disks, and memories.

10           When distributed, the computer-readable program may be  
installed, for example, in a device with a storing unit to be  
used. The device performs the program counting operation  
described in the embodiment, by executing the computer-readable  
program.

15           (4) According to the embodiment, the profile selecting  
unit 44, the profile selecting rule storing unit 45, and the  
profile selecting rule obtaining unit 47 are formed as an  
integrated circuit. The same holds true for the counting unit  
28 and the profile selecting rule generating unit 31, and the  
20 extracting unit 72, the profile selecting rule generating unit  
77 and the counting unit 78. However, each of these functional  
units may be formed as a one-chip integrated circuit.

A one-chip integrated circuit including the selected program information obtaining unit 48, the selected program information storing unit 51, and the recommended program notifying data generating unit 52 in addition to the profile selecting unit 44, the profile selecting rule storing unit 45, and the profile selecting rule obtaining unit 47 may be used for the terminal device 4 shown in Fig. 2. Furthermore, an integrated circuit including the transmission information generating unit 42 and the recording instruction history storing unit 43 in addition to the above-mentioned functional units may be used.

A one-chip integrated circuit including the selecting unit 29 and the selected program information generating unit 30 in addition to the counting unit 28 and the profile selecting rule generating unit 31 may be used for the recording server 2 shown in Fig. 3. Furthermore, an integrated circuit including the extracting unit 21 and the network communication unit 20 in addition to the above-mentioned functional units may be used.

The integrated circuits may be called LSI depending on the degree of the integration of the devices.

A special-purpose circuit, a general processor, or a Field Programmable Gate Array (FPGA) Reconfigurable Processor that

can change the architecture may be used for the integrated circuits. In addition, if advance in technology enables a replacement for a semiconductor integrated circuit to be developed, for example, an integrated circuit using a  
5 biotechnology, the new type of integrated circuit can be used for the integrated circuits as well.

#### ~~Industrial Applicability~~

The present invention can be employed for a network  
10 recording system to provide a program recording service.

## ABSTRACT

A network recording system includes a recording server and a terminal device. The terminal device includes a receiving unit ~~operable to receive~~ for receiving a designation of a program to be recorded, from a user, a selecting unit ~~operable to select~~ for selecting a user profile to which the user belongs, ~~out of a plurality of user profiles~~, and a transmitting unit ~~operable to transmit~~ for transmitting recording instruction information to the recording server, ~~where~~ the recording instruction information includes a combination of a program ID identifying the program to be recorded and user profile information showing the user profile to which the user belongs. The recording server includes a reception unit ~~operable to receive~~ for receiving the recording instruction information from the terminal device, a recording unit ~~operable to record~~ for receiving the program identified by the program ID ~~included in the recording instruction information~~, and a counting unit ~~operable to count~~ for counting, for each of ~~the~~ a plurality of user profiles, a number of times each program ID has been received by the reception unit.